UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/438,206	11/12/1999	RIYI SHI	7024-427-PUR	9018

26813 7590 10/29/2003

MUETING, RAASCH & GEBHARDT, P.A.
P.O. BOX 581415
MINNEAPOLIS, MN 55458

EXAMINER	
HUI, SAN MING R	

ART UNIT	PAPER NUMBER
1617	32

DATE MAILED: 10/29/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/438,206	Applicant(s) SHI ET AL.	
	Examiner San-ming Hui	Art Unit 1617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 April 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *22-30,38-40,43 and 44* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *22-30,38-40,43 and 44* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a)☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3)☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *30* .
4)☐ Interview Summary (PTO-413) Paper No(s). _____ .
5)☐ Notice of Informal Patent Application (PTO-152)
6)☐ Other: .

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on April 28, 2003 has been entered.

Claims 22-30, 38-40, and 43-44 are pending.

The outstanding rejection under 35 USC 112, first paragraph is withdrawn in view of the Applicant's remarks filed April 28, 2003.

Upon reconsideration and in view of applicant's remarks filed April 28, 2003, the outstanding rejections under 35 USC 102 and 103 are withdrawn.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 22-29, 38-39 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-17 of copending Application No. 10/132,542. Although the conflicting claims are not identical, they are not patentably distinct from each other because the '542 patent recites the method of treating a mammalian nerve tissue injuries with a biofusion materials. '542 teaches that the preferred biofusion material as polyethylene glycol (See claims 3 and 4 particularly) and the nerve tissue injuries can be spinal cord injuries (See claim 17). One of ordinary skill in the art would have been motivated to employ polyethylene glycol (the preferred agent in '542) in a method to treat spinal cord injuries (the specific recited nerve tissue injury in '542). Employing any preferred biofusion agents, such as polyethylene glycol, would have been reasonably expected to be useful in treating any nerve tissue injuries, including spinal cord injuries.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 30 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The recitation "said method resulting in a synergistic increase... behavior in said patient." in claim 30, lines 4-6 renders the claims indefinite as to method steps required to achieve the recited results. It is not clear what amount of potassium channel blockers would exhibit synergistic activities with polyalkylene glycol. The recitation of "synergistic amount of 4-aminopyridine" would be favorably considered. Examiner considers the recitation "effective amount" as the amount effective in treating spinal cord injury, not producing synergism with polyethylene glycol.

Examiner considers the instant method of treating spinal cord injury as the local administration to the spinal (such as intrathecal or intraspinal) of a composition containing polyethylene glycol with or without any active ingredients.

New ground of rejection

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 22, 24-29, 38-39 are rejected under 35 U.S.C. 102(b) as being anticipated by Ducker et al. (J. Neurosurg., 1969;30(6):693-697).

Ducker et al. teaches intrathecal administration of Depo-Medrol, a depot formulation of methylprednisolone containing PEG 3350, is effective in treating spinal cord injuries and improve recovery of neurological function after traumatic spinal cord injuries in dogs (See Abstract, page 694, col. 1, second paragraph and page 695, col. 1, Third paragraph; also page 695, Fig. 1 and Table 1).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein

were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 22, 24-30, 38-40 and 43-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Balasubramanian (US Patent 5,382,584) in view of Potter et al. (Clin Invest Med, 19(4), Suppl.: S80, #533). Potter is reference of record.

Balasubramanian teaches a method of employing piperazinyl phenylacetamide compounds useful as treatment for spinal cord injuries broadly (see col. 4, line 2). Balasubramanian also teaches one of the routes to administer the piperazinyl phenylacetamide compounds as intrathecal (See col. 5, line 6). Balasubramanian also teaches when administering the piperazinyl phenylacetamide compounds parenterally, such compounds will be formulated into solution or suspension with suitable solvent such as polyethylene glycol 200-1500 (See col. 6, lines 17-27).

Balasubramanian does not expressly teach 4-aminopyridine, a potassium channel blocker, can be combined with method of treating spinal cord injury such as crushed spinal cord injury. Balasubramanian does not expressly teach specifically administering the piperazinyl phenylacetamide compounds with polyethylene glycol 200-1500 intrathecally.

Potter et al. teaches the use of 4-aminopyridine to treat spinal cord injury (See #533).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ 4-aminopyridine with the piperazinyl phenylacetamide compounds of Balasubramanian to treat spinal cord injuries such as crushed spinal cord injury. It would have been obvious to one of ordinary skill in the art at the time the invention was made to administer the piperazinyl phenylacetamide with polyethylene glycol 200-1500 intrathecally in a method to treat spinal cord injuries.

One of ordinary skill in the art would have been motivated to employ 4-aminopyridine with the piperazinyl phenylacetamide compounds of Balasubramanian to treat spinal cord injuries such as crushed spinal cord injury. 4-aminopyridine is known to be useful as treatment for spinal cord injury. The polyethylene glycol containing formulation of Balasubramanian is also known to treat spinal cord injury. Employing them concomitantly for treating the very same condition, spinal cord injuries, would be obvious (*In re Kerkhoven* 205 USPQ 1069).

One of ordinary skill in the art would have been motivated to administer the piperazinyl phenylacetamide with polyethylene glycol 200-1500 intrathecally (Note: a polyethylene glycol containing composition) in a method to treat spinal cord injuries such as crushed spinal cord injury. Since the piperazinyl phenylacetamide compounds of Balasubramanian are known to be useful to treat spinal cord injury. Administering such compounds intrathecally, in solution form with polyethylene glycol 200-1500, to treat spinal cord injury would have been reasonably expected to be effective. It is known that polyethylene glycol is the exemplified solvent useful to dissolve the piperazinyl phenylacetamide compounds of Balasubramanian. Employing polyethylene

glycol as the solvent would be considered as selecting from obvious alternatives. The skilled of artisan would possess all conventional administration method of the active compounds such as oral administration. The selection of one or another route of administration would be seen as a simple selection from among obvious alternatives.

Claims 30, 40, and 43-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ducker et al. in view of Potter et al. (Clin Invest Med, 19(4), Suppl.: S80, #533). Potter are references of record.

Ducker et al. teaches intrathecal administration of Depo-Medrol, a depot formulation of methylprednisolone containing PEG 3350, is effective in treating spinal cord injuries and improve recovery of neurological function after traumatic spinal cord injuries in dogs (See Abstract, page 694, col. 1, second paragraph and page 695, col. 1, Third paragraph; also page 695, Fig. 1 and Table 1).

Ducker et al. does not expressly teach 4-aminopyridine, a potassium channel blocker, can be combined with method of treating spinal cord injury.

Potter et al. teaches the use of 4-aminopyridine to treat spinal cord injury (See #533).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ 4-aminopyridine in combination with the Depo-Medrol to treat spinal cord injuries.

One of ordinary skill in the art would have been motivated to employ 4-aminopyridine in combination with the Depo-Medrol to treat spinal cord injuries. 4-aminopyridine is known to be useful as treatment for spinal cord injury. Depo-Medrol is

also known to treat spinal cord injury. Employing them concomitantly for treating the very same condition, spinal cord injuries, would be obvious (*In re Kerkhoven* 205 USPQ 1069).

Response to Arguments

Applicant's arguments with respect to claims 22-30, 38-40, and 43-44 have been considered but are moot in view of the new ground(s) of rejection.

Allowable subject matter

Claim 23 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The method of treating severed spinal cord injury, as recited in claim 23, is not taught or fairly suggested by the prior art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to San-ming Hui whose telephone number is (703) 305-1002. The examiner can normally be reached on Mon 9:00 to 1:00, Tu - Fri from 9:00 to 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sreeni Padmanabhan, PhD., can be reached on (703) 305-1877. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1235.

San-ming Hui
Patent examiner
Art Unit 1617